UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,593	06/25/2003	Yogesh Swami	NOKM.046PA	4865

40581 7590 08/05/2005

CRAWFORD MAUNU PLLC
1270 NORTHLAND DRIVE, SUITE 390
ST. PAUL, MN 55120

EXAMINER	
JONES, PRENELL P	
ART UNIT	**PAPER NUMBER**
2667	

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/603,593	SWAMI, YOGESH	
	Examiner	Art Unit	
	Prenell P. Jones	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 5/23/05.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-33 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) 20-33 is/are allowed.

6)☐ Claim(s) 1-3,13,14,16-19 is/are rejected.

7)☐ Claim(s) 4-12 and 15 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments with respect to claims 1-33 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 16, Applicant is claiming in line 2, "a **standard congestion response procedure**", which is unclear to Examiner as to what Applicant is claiming.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of

2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1, 2 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Ramakrishnan (US Pat 6,711,128).

Regarding claims 1, 2 and 17 Ramakrishnan discloses increasing throughput over network connections experiencing data loss due to non-congestion-based packet loss that includes identifying at a network node, non-congestion-based packet loss over a network connection between a sending module and the network node (Fig. 7, mobile receiver (network node) identifying packets not received as a result of non-congestion related loss between a sending node/base station sending a loss signal notification from the network node to the sending module in response to identification of the non-congestion-based packet loss and receiver distinguishes between packets received with non-congestion bit-errors and packets received due to congestion (1st SACK with non-congestion based loss indication) (Fig. 2E, Abstract, col. 3, line 24-63, col. 4, line 22-62, col. 5, line 10-61, col. 6, line 1-45), verifying the non-congestion-based packet loss at the sending module (Base station duplicates marked SACK) (col. 3, line 52-64, col. 6, line 30-67), and performing a first loss recovery procedure different from a second loss recovery procedure associated with congestion-based packet loss (Fig. 3B, Base station retransmits the correct packet, utilizing retransmit recovery scheme slow-start recovery scheme when needed, col. 6, line 46-67), if the non-congestion-based packet loss is verified at the sending module ((Fig. 2C, 2E, 3A, col. 5, line 27 thru col. 6, line 24), and non-

congestion-related packet loss includes packet loss due to bit (PLB) errors (Fig. 2 and 3, Abstract, col. 7, line 53).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 3, 13, 14, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramakrishnan (US Pat 6,711,128). in view of Balakrishnan et al.

Regarding claims 3, as indicated above, Ramakrishnan discloses improving network performance wherein the receiver distinguishes between packets with non-congestion bit errors and those packets received due to congestion. However, Ramakrishnan is silent on loss notification from network node/base station includes embedding data associated with the packet experiencing packet loss into a signaling protocol packet, and sending the signaling protocol packet as the loss notification to the sending module. In analogous art, Balakrishnan discloses a receiver that sends explicit loss notifications (ELN) message with duplicate acknowledgments for lost packets, base station generates ELN message to sender when it observes duplicate TCP acknowledgments arriving from mobile host (network node), (page 760, col. 1, ELN is added to TCP acknowledgment (ELN is embedded into a signal protocol) to mark/identify that non-congestion related loss has occurred, which is received at the sender who may perform a

fast retransmission (recovery process), receiver generates ELN information. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to be motivated to implement adding data associated with packets experiencing packet loss into a signaling protocol packet and sending the signaling protocol packet as a loss notification to the sending module with the teachings of Ramakrishnan for the purpose of further improving TCP performance in wireless networks that experience losses.

Regarding claim 13 and 14, as indicated above, Ramakrishnan discloses improving network performance wherein the receiver distinguishes between packets with non-congestion bit errors and those packets received due to congestion. However, Ramakrishnan is silent on the receipt of a predetermined number of ACK packets from the network node for the marked packet. In analogous art, Balakrishnan discloses a receiver that sends explicit loss notifications (ELN) message with duplicate acknowledgments for lost packets, base station generates ELN message to sender when it observes duplicate TCP acknowledgments arriving from mobile host (network node), (page 760, col. 1, ELN is added to TCP acknowledgment (ELN is embedded into a signal protocol) to mark/identify that non-congestion related loss has occurred, which is received at the sender who may perform a fast retransmission (recovery process). Balakrishnan further discloses enabling the performance of a first loss recovery procedure in response to receipt of a predetermined number of duplicate ACK packets from the network node for the marked packet (Fig. 1, receiver sends to the base station SACKs that are marked to indicate that a non-congestion related loss has occurred, once the base station receives three duplicate/predetermined number of duplicates marked SACKs invokes retransmit/first recovery, predetermined ACK given a time window for arrival, page 760, left column, page 761, right column, 2nd and 3rd paragraphs, page 762, left column). Therefore, it would have been obvious

to one of ordinary skill in the art at the time of the invention to be motivated to implement receiving predetermined number of ACK packets from the network node with the teachings of Ramakrishnan for the purpose of further improving system throughput.

Regarding claim 18, Balakrishnan further discloses (page 761, col. 1, line 5-14) the receiving entity on the lossy link generates an exponential distribution for bit-error rate, and changes the TCP checksum of the packet if there is a determination to drop packets.

Regarding claim 19, Balakrishnan further discloses connections wired or wireless (Fig. 3).

Allowable Subject Matter

3. Claims 20-33 are allowed over prior art.

4. Claims 4, 5-12, 15 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: Although the combined cited prior art discloses a communication system whereby the receiver distinguishes between packets received with non-congestion bit errors, they fail to teach or suggest a packet marking module coupled to receive PLB indications and to mark the respective previously-transmitted packets as potentially subject to PLB, and a verification module coupled to receive a packet loss indication corresponds to any of the previously-transmitted packets that have been marked, and a packet marking module coupled to receive at least a portion of the loss notification signal and to mark the packet as potentially subject to non-

congestion based packet loss, and copying as many bytes from the non-congestion packet loss as can fit in the signal protocol packet in the network layer packet, setting a slow start threshold equal to a number of packets in flight until packet loss is acknowledged, dropping the signaling protocol packet if transport layer protocol in next header field is not among predetermined group of transport layer protocols, identifying a transport protocol in a next field, and incrementing a congestion window for each duplicate acknowledge received.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prenell P. Jones whose telephone number is 571-272-3180. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Prenell P. Jones

August 3, 2005

CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

8/3/05